



Net-Zero Strategy Report FY2024

Produced for Tottenham Hotspur Football and
Athletic Co Ltd

By Inspired
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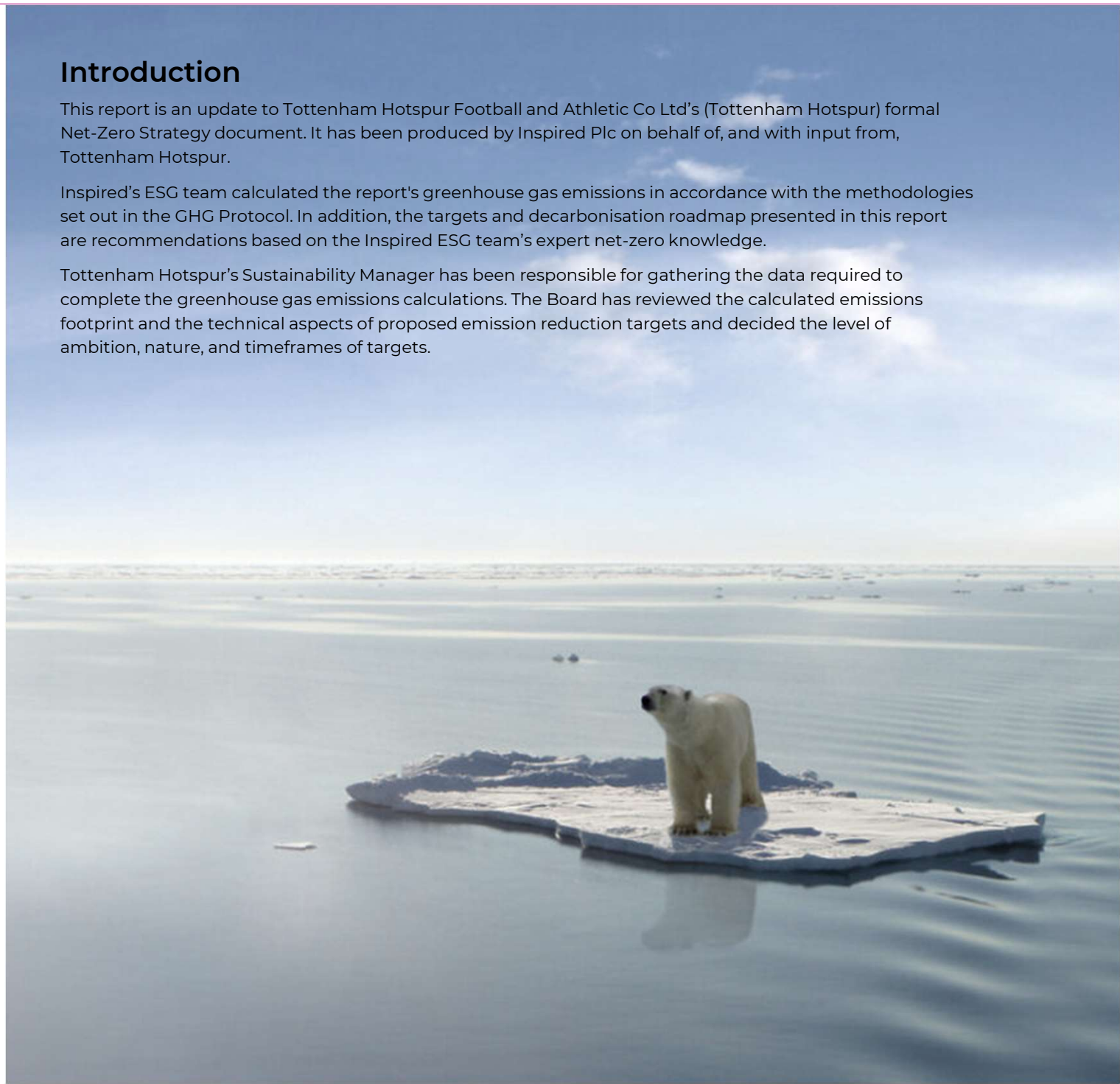
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Introduction

This report is an update to Tottenham Hotspur Football and Athletic Co Ltd's (Tottenham Hotspur) formal Net-Zero Strategy document. It has been produced by Inspired Plc on behalf of, and with input from, Tottenham Hotspur.

Inspired's ESG team calculated the report's greenhouse gas emissions in accordance with the methodologies set out in the GHG Protocol. In addition, the targets and decarbonisation roadmap presented in this report are recommendations based on the Inspired ESG team's expert net-zero knowledge.

Tottenham Hotspur's Sustainability Manager has been responsible for gathering the data required to complete the greenhouse gas emissions calculations. The Board has reviewed the calculated emissions footprint and the technical aspects of proposed emission reduction targets and decided the level of ambition, nature, and timeframes of targets.



Overview

Metrics and Targets

Tottenham Hotspur Football and Athletic Co Ltd is using FY2022 as its baseline year for its Scope 1, 2, and 3 targets. Since FY2022, Tottenham Hotspur has reduced its Scope 1 and 2 emissions by 37%, while its Scope 3 emissions have increased by 36%.

In 2021, Tottenham Hotspur became a signatory of the UN Sports for Climate Action framework. As a part of this commitment, the below targets have been set:

- A 50% reduction in Scopes 1, 2 & 3 emissions by 2030, from a FY2022 baseline
- Net-zero Scope 1, 2 and 3 emissions by 2040, compared to a FY2022 baseline
- Scope 2 emissions will be tracked using a market-based approach

Below is an update on Tottenham Hotspur's emissions changes. Overall, emissions have increased, but significant progress has been made in reducing Scope 1 emissions.

Table 1: Baseline and latest year GHG emissions - summary

	Baseline emissions FY2022	Latest emissions FY2024	Progress
Scope 1	3,523 tCO ₂ e	2,203 tCO ₂ e	37% reduction
Scope 2 (market-based)	0 tCO ₂ e	0 tCO ₂ e	-
Scope 2 (location-based)	4,458 tCO ₂ e	4,734 tCO ₂ e	6% increase
Scope 3	37,203 tCO ₂ e	50,580 tCO ₂ e	36% increase
Total emissions	40,726 tCO₂e	52,783 tCO₂e	30% increase
Fan travel	39,794 tCO ₂ e	41,272 tCO ₂ e	4% increase

* Following UEFA guidance, emissions from supporters making their way to home games have been removed from Scope 3 Category 9, with the baseline restated accordingly. UEFA guidelines advise that "spectator mobility" is out of the scope of a football club's Scope 3 emissions but should still be reported.

Decarbonisation Roadmap

In 2022, Tottenham Hotspur established a decarbonisation action plan that split its emissions down into four key focus areas:



To date, Tottenham Hotspur has completed the following decarbonisation actions:

- Drink packaging switched from plastic bottles to Tetra Pak, using glass and aluminium where possible.
- Food packaging is reduced in size and is paper-based.
- Fresh produce delivered by EV.
- 50% of food deliveries are within 50 miles of the stadium.
- Implemented a system to review energy consumption, identifying alternative solutions with lower energy consumption (stadium).
- Installation of air source heat pumps at the Training Centre.
- Submetering and a switch to LED bulbs at the Training Centre.
- Implemented a business travel policy.
- Commenced the process of installing solar panels at the stadium.
- Implemented more precise pitch heating controls.
- Obtained ISO1201 event management certification.
- Appointed a Sustainability Manager.

In the short term, the below actions have been identified for consideration:

- Conduct a more in-depth fan travel survey
- Conduct a feasibility study into harvesting rainwater and pitch water for re-use
- Review of food procurement to reduce waste, increase plant-based alternatives and reduce meat content in big-ticket food options
- Engage with suppliers to review sustainability credentials
- Conduct energy audits to review consumption and controls

Governance



Overview of net-zero Governance

Tottenham Hotspur's net-zero journey had been coordinated by the club's Head of PR, with a plan to hire a Sustainability Manager in 2025 who would have responsibility for leading the sustainability working group and having general oversight for Tottenham Hotspur's net-zero strategy and implementation. This was accelerated, and a Sustainability Manager was appointed in 2024, who now oversees Tottenham's ESG strategy and journey. The club works with an external consultant (Inspired) to measure the club's Scope 1, 2 and 3 emissions and to help develop a net-zero plan. The club's net-zero targets were set and signed-off by the Board.

The club has a sustainability working group with representatives from across the business, including the following roles:

- Executive Director (chair of the working group)
- Sustainability Manager
- Stadium Director
- Training Centre Operations Director
- Property Director
- Director of Legal
- Merchandise & Licensing Director
- HR Director
- Catering Services Director
- Partnerships Director
- Commercial Sales Director

The working group meets on a quarterly basis to discuss progress against sustainability actions.

The working group has also received net-zero training from Inspired on the following topics:

- Introduction to climate change, greenhouse gas emissions and net-zero
- Tottenham Hotspur's Scope 1, 2 and 3 GHG emissions
- Tottenham Hotspur's net-zero roadmap and actions
- Science-based targets

Metrics

Greenhouse Gas Emissions Inventory

Tottenham Hotspur is using FY2022 as its Scope 1, 2 and 3 baseline, as this is the earliest year data has been calculated for. The Scope 1 and 2 emissions include energy consumption at Tottenham Hotspur's sites. Scope 2 emissions are baselined using the market-based approach, and targets will be tracked using this approach.

Emissions have been calculated following the GHG Protocol guidance and account for all operational and value chain emissions associated with the company. The Scope 3 inventory is divided into the 15 categories established by the Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting & Reporting Standard. Not all categories are applicable to the company. All applicable categories have been quantified.

Table 2: Baseline and latest year GHG emissions – full inventory

	Baseline emissions FY2022 tCO ₂ e	FY2023 emissions tCO ₂ e	Latest emissions FY2024 tCO ₂ e
Scope 1	3,523	2,503	2,203
Scope 2 – Location-based	4,458	4,684	4,734
Scope 2 – Market-based	0	0	0
Scope 3	37,203	42,187	50,580
1. Purchased Goods and Services	14,708	21,503	29,844
2. Capital Goods	11,357	11,502	13,544
3. Fuel- and Energy-related Activities	2,428	1,904	1,924
4. Upstream Transportation and Distribution	327	615	474
5. Waste Generated in Operations	21	22	22
6. Business Travel	5,714	3,484	1,762
7. Employee Commuting	1,391	1,695	1,869
8. Upstream Leased Assets	n/a	n/a	n/a
9. Downstream Transportation and Distribution*	n/a	n/a	n/a
10. Processing of Sold Products	n/a	n/a	n/a
11. Use of Sold Products	10	2	7
12. End-of-life Treatment of Sold Products	60	46	51
13. Downstream Leased Assets	1,186	1,413	1,082
14. Franchises	n/a	n/a	n/a
15. Investments	n/a	n/a	n/a
Additional Scope 3 emissions (Fan Travel)*	39,794	44,558	41,272

* Following UEFA guidance, emissions from supporters making their way to home games have been removed from Scope 3 Category 9, with the baseline restated accordingly. UEFA guidelines advise that "spectator mobility" is out of the scope of a football club's Scope 3 emissions but should still be reported.

Targets

Summary of Tottenham Hotspur Football and Athletic Co Ltd's targets

In 2021, Tottenham Hotspur committed to the UN's Sports for Climate Action Framework. These targets are more ambitious than the minimum requirement of the Paris Agreement. The Board has set and signed off on all targets using Tottenham Hotspur's FY2022 emissions as a baseline. As a signatory of the framework, the below targets are required.

Near-term target:

Achieve a 50% absolute reduction in emissions by 2030, from a FY2022 baseline. This target covers Scopes 1, 2 and 3. A market-based approach is used for Scope 2 emissions.

Net-Zero Target:

Net-zero* (at least 90% absolute reduction) Scopes 1, 2 and 3 by 2040, from a FY2022 baseline. A market-based approach is used for Scope 2 emissions.

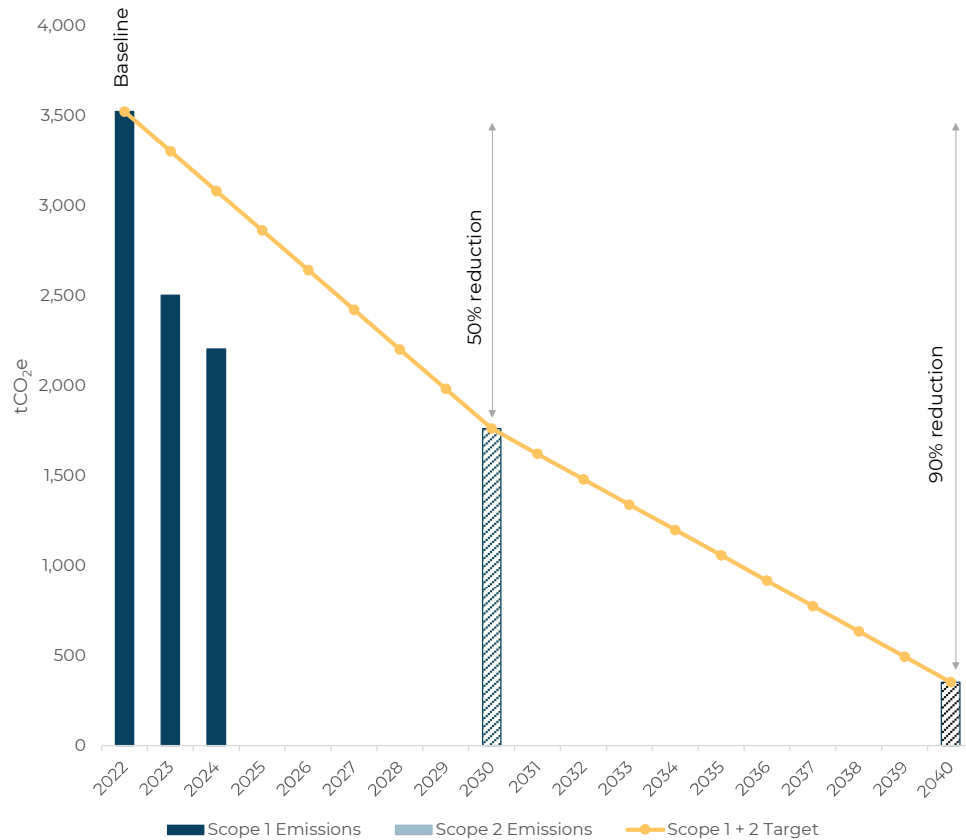
*Net-zero definition: Scope 1, 2 and 3 emissions must be reduced on an absolute basis by at least 90%, with no more than 10% of baseline emissions being neutralised through carbon removals. For Tottenham Hotspur, this is 352 tCO₂e for Scope 1 and 2 (market-based) and 3,720 tCO₂e for Scope 3.

Progress against targets

Scope 1 and 2

In FY2024, Tottenham Hotspur achieved a 37% reduction compared to its baseline year, surpassing the target reduction of 12.5%.

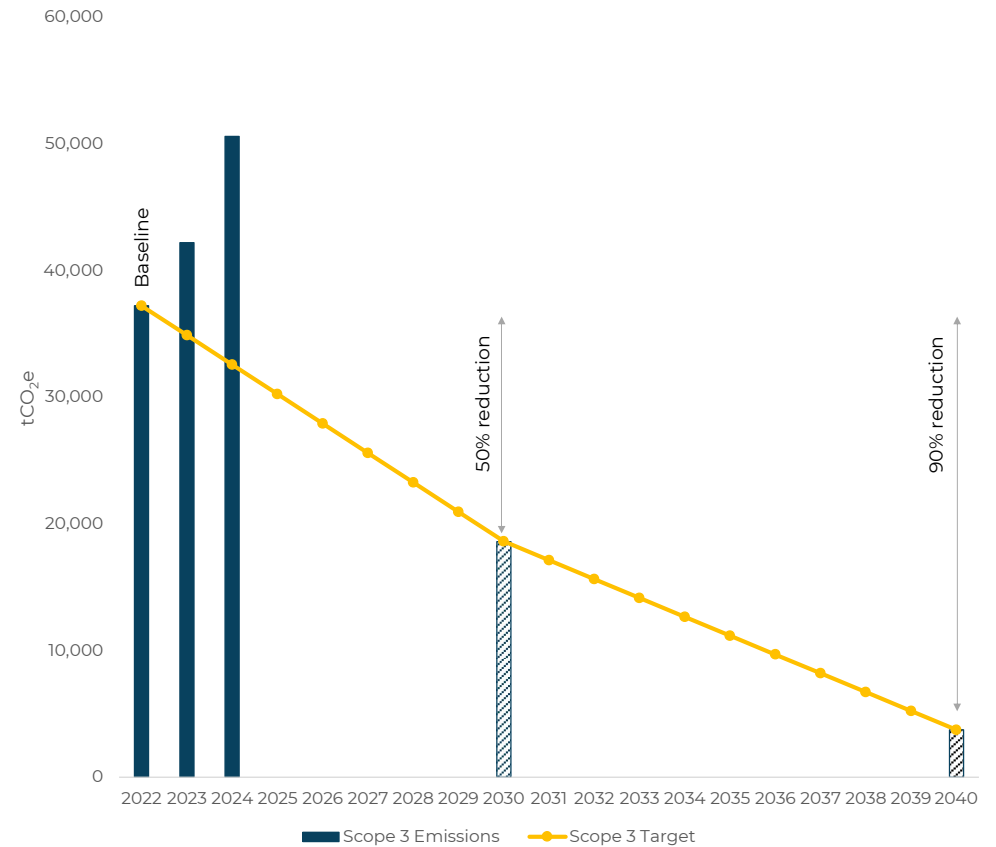
Figure 1: Progress against Scope 1 and 2 targets



Scope 3

In FY2024, Tottenham Hotspur's Scope 3 emissions increased by 36% compared to the baseline, falling short of the target reduction of 12.5%. To meet the target of a 50% reduction by 2030, emissions need to be reduced by 10.5% per annum from the current position.

Figure 2: Progress against Scope 3 targets



Progress against targets

Scopes 1 and 2

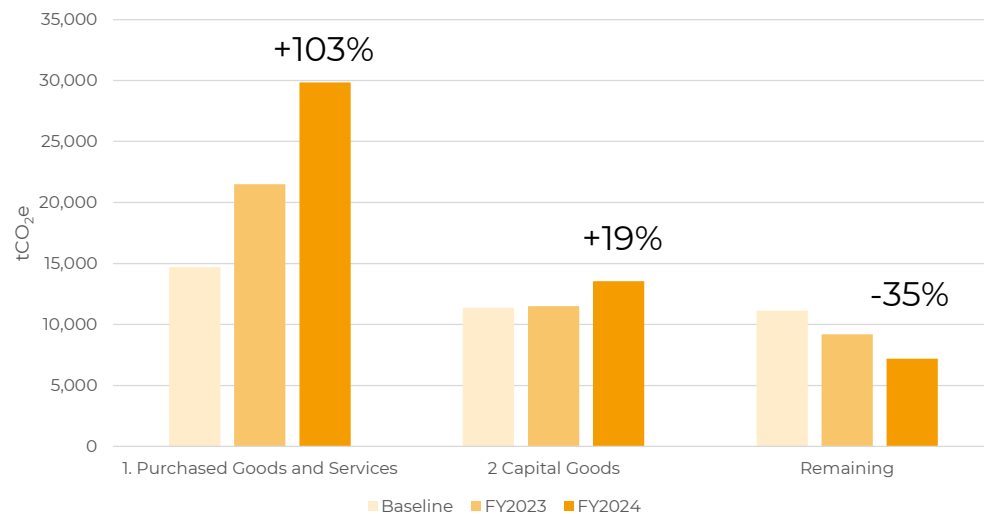
Table 3: Baseline and latest year GHG emissions – full inventory

	Scope 1 (tCO ₂ e)	Scope 2 (tCO ₂ e)	Total Scope 1 & 2 Emissions (tCO ₂ e)	Change From Baseline (%)
FY2022	3,523	0	3,529	-
FY2024	2,203	0	2,203	-37%
2030 Target	1,762	0	1,762	-20%*

*Due to Tottenham Hotspur's Scope 1 & 2 emissions reducing by 37% from the baseline, a reduction of 20% from current levels is now required by the target date of 2030.

Scope 3

Figure 3: YoY change (FY2022 to FY2024) in the highest emitting scope 3 categories



Decarbonisation Roadmap



Summary of decarbonisation roadmap

In 2022, Tottenham Hotspur identified four key decarbonisation focus areas. Short (up to 2025), medium (2026-2030), and long-term (up to Net-Zero target date) actions for each focus area were set out. In line with the most recent UEFA guidance, Fan Travel is now considered to fall outside the scope of Tottenham Hotspur's emissions. However, Tottenham Hotspur remains committed to influencing and enabling low-carbon options for supporters to attend matches.

Table 4: Summary of decarbonisation roadmap

	Completed actions	Short-term actions (by 2025)	Medium-term actions (2026-2029)	Long-term actions (beyond 2030)
Procurement	- A shift away from plastic drink packaging. - Improved food delivery methods – use local suppliers. - Offer more plant-based options. - Reduced food packaging.	- Identify and survey top 50% of catering / food suppliers. - IT hardware data collection.	- Request product and journey-specific details from the largest suppliers. - Review procurement policy to ensure sustainability measures are embedded.	- Purchase low-carbon products. - Work with low-carbon suppliers.
Energy	- Submetering and LED bulb installation at the training ground. - Pitch heat pump installation. - Create a maintenance schedule to ensure all systems continue to run efficiently. - PV panel feasibility study at Stadium. - Optimise current systems.	- Implement energy savings actions identified in site surveys. - Staff training on energy-efficient practices. - Solar PV installation.	Full replacement of existing gas boilers.	- Power purchase agreement. - Green gas purchase.
Business Travel	Implemented a business travel policy.	- Host an employee engagement workshop. - Improve data collection to pinpoint emissions hotspots.	- Review potential league-wide travel mandates (Sustainable Travel Charter¹). - Transition vehicle fleet.	Partner with low-carbon travel providers for first team (men's and women's) travel across south of England and the Midlands.
Fan Travel	Conducted a baseline fan survey to understand the impact associated with supporter travel.	- Conduct a comprehensive fan survey. - Supporter engagement and education.	- Implement travel initiatives. - Explore partnerships with low-carbon travel providers (TFL, e-scooters, bike hires).	

¹ [Sustainable Travel Charter](#)

Procurement

Overview

Procurement covers two Scope 3 categories, Category 1 (Purchased Goods and Services) and Category 2 (Capital Goods). Catering accounts for the largest share of these emissions, 18% of procurement emissions. From the capital goods purchased, fixtures and fittings was the highest emitting spend category, excluding construction costs.

Relevant action teams

Procurement teams in charge of catering should be the main action point moving forwards. For any capital goods purchased, facilities and IT procurement teams.

Key challenges

Data quality improvements are needed to see decarbonisation strategies reflected in Tottenham Hotspur's emissions.

External enablers

As Environmental Product Declarations (EPDs) and product Lifecycle Assessments (LCAs) become more common in society for manufactured goods, it will become easier to identify low-carbon procurement options.

Specific targets/KPIs

Aim to collect procurement specific data from top catering suppliers in FY2024, covering 50% of spend. For IT hardware services (10% of Scope 3 Category 2), collect an itemised list of all purchases.

Figure 4: Share of total emissions from procurement

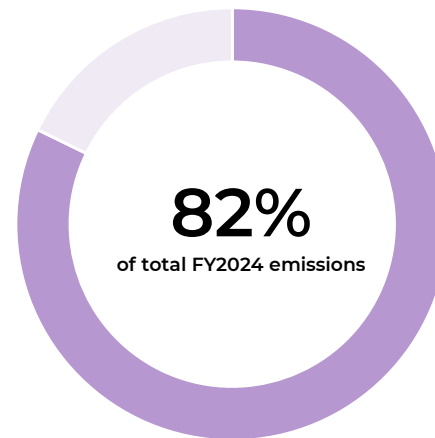


Figure 5: YoY change in procurement emissions

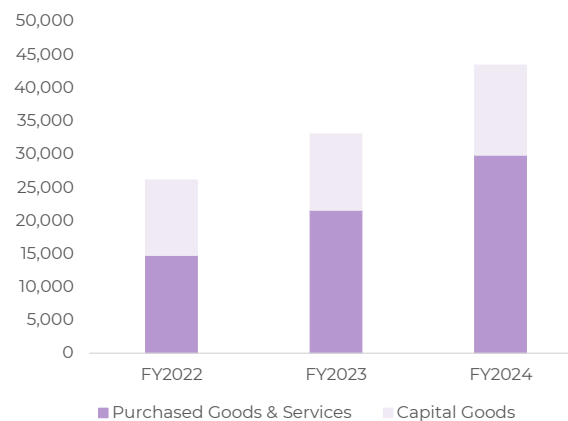


Table 5: Procurement decarbonisation roadmap

	Year	Action	Description
Completed actions	-	A shift away from plastic drink packaging.	Where possible, Tetra Pak, glass, and aluminium have been introduced. These materials allow for better recycling methods at the product's end of life.
	-	Increase reliance on local suppliers.	50% of food deliveries were within 50 miles of the stadium. All produce was delivered using electric vehicles.
	-	Offer more plant-based options.	Offering plant-based options instead of some of the higher-emitting foods can significantly reduce the associated emissions. For example, a plant-based burger can offer up to a 98% reduction in emissions versus beef ² .
	-	Reduced food packaging.	Food packaging is reduced in size and is paper-based.
Short-term	Underway	Identify and survey top 50% of catering/food suppliers.	Look to work with suppliers to collect an itemised list of food and drink procurement. If suppliers can provide the emissions associated with items purchased, a full itemised list is not required.
	2025	IT hardware data collection.	IT hardware purchases accounted for over 1,000 tCO ₂ e. An itemised list will allow for a more accurate emissions calculation and identification of specific decarbonisation actions. For example, purchasing a refurbished laptop can save up to 75% of emissions compared to a new purchase ³ .
Medium-term	2028	Product and journey specific data.	Request product and journey-specific emissions data from all major suppliers.
	2029	Review sustainable procurement policy.	Once suppliers have been requested for data, all procurement policies should be reviewed. This review would ensure all suppliers meet a minimum requirement, such as having access to product and journey-specific emissions data.
Long-term	2035	Low or no carbon procurement.	Transition all procurement to low or no-carbon alternatives.

² [Plant-based alternatives](#)

³ [StepIT 2019 Sustainability Report](#)

Energy

Overview

Despite only accounting for 9% of Tottenham Hotspur's total emissions, gas emissions account for 96% of Scope 1 and 2 emissions. Gas consumption increased by 3% from FY2023, while electricity consumption increased by 1% in the same period. In 2019, Tottenham Hotspur opened their new stadium, which features multiple energy efficiency improvements. Additionally, Tottenham Hotspur purchased 100% renewable electricity, resulting in zero emissions under the market-based method.

Relevant action teams

Facilities teams will implement initiatives across Tottenham Hotspur. Procurement and finance teams will fund initiatives.

Key challenges

Energy efficiency actions tend to have an upfront cost. Large-scale changes to significantly reduce emissions will incur even greater expenses.

External enablers

Target to decarbonise the UK electricity grid by 2035.

Specific targets/KPIs

Ensure Tottenham Hotspur is on track to halve Scope 1 and 2 emissions by 2030. Implement a strategy to reach net zero by 2040 without full reliance on the UK grid decarbonisation.

Figure 6: Share of total emissions from energy consumption

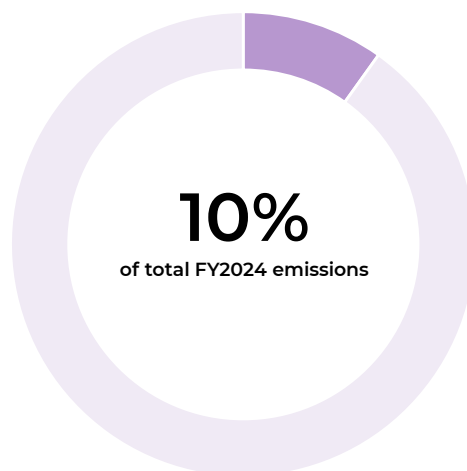


Table 6: FY2024 energy emissions

	FY2022 Baseline Emissions	FY2024 Emissions
Scope 1	3,523 tCO ₂ e	2,203 tCO ₂ e
Scope 2 – Purchased Electricity (market-based)	0 tCO ₂ e	0 tCO ₂ e
Scope 3 – Category 3: Fuel- and Energy-related Activities	2,428 tCO ₂ e	1,924 tCO ₂ e
Scope 3 – Category 13: Downstream Leased Assets	1,186 tCO ₂ e	1,082 tCO ₂ e

Table 7: Energy decarbonisation roadmap

	Year	Action	Description
Completed actions	-	Training ground submetering.	Submeters were installed at the training ground to track energy consumption fully. This will allow for energy hotspots to be identified.
	-	LED bulb installation.	LED bulbs have been installed throughout the training ground's facilities. They can be up to 90% more efficient than other bulbs.
	-	Pitch heat pump installation.	An electric heat pump was installed to heat the pitch efficiently.
	-	Maintenance schedule.	Producing a maintenance schedule will ensure all equipment is running as efficiently as possible. These actions could include cleaning ventilation fans, replacing air filters, maintaining the boiler, and servicing any refrigerant units.
	-	PV panel feasibility study at Stadium.	Explore the expansion of current solar PV installations.
	-	Optimise current systems.	Optimising current building management systems to ensure multiple systems (heating, cooling, etc.) do not compete.
Short-term	2025	Implement energy savings actions identified in site surveys.	Several "quick-win" strategies were identified in the ESOS report with payback periods of less than one year.
	2025	Train kitchen staff.	Energy-efficient cooking methods present major opportunities for energy savings and can be implemented at the stadium and training ground.
	2025	Solar PV installation.	Explore the expansion of current solar PV installations. Producing renewable energy on-site results in zero Scope 2 emissions.
Medium-term	2029	Replace gas boilers.	Opting for further use of electric alternatives to gas boilers will eliminate Scope 1 emissions. Long-term cost reductions can be achieved if coupled with further solar PV installations.
Long-term	2030+	Purchase power agreement (PPA).	Having a PPA with a renewable electricity generator will allow for renewable electricity to cover the remaining consumption beyond self-generated electricity.
	2035	Green gas purchases.	Purchase greener gases for any remaining gas supplies. This is long-term as these products become more readily available. It is not applicable if all gas supplies have been eliminated.

Business Travel

Overview

Tottenham Hotspur's business travel emissions are dominated by air travel. Accounting for 84% of business travel emissions (FY2023: 88%), air travel should be the focus moving forward. Business travel includes all first-team travel and employee travel.

Relevant action teams

Implementing change will likely require buy-in from multiple business areas. Once data quality is improved, emission sources can be identified. Based on the assumption that the men's first team is responsible for most air travel emissions, a club-wide change in strategy would be required.

Key challenges

If the men's first team is responsible for most of business travel emissions, it could be seen as a competitive disadvantage to alter travel policies away from that of Tottenham Hotspur's biggest competitors.

External enablers

As new technologies are developed to reduce the emissions associated with air travel, Tottenham Hotspur's emissions will be positively impacted. However, technologies will likely not reduce emissions quickly enough to meet net zero by 2040.

Specific targets/KPIs

Eliminate domestic flights to Premier League games to halve emissions by 2030. A strict criteria can be implemented to allow flights if teams are on a short week and must travel to/from Europe, followed by a trip to league opponents such as Newcastle.

Figure 7: Share of total emissions from business travel

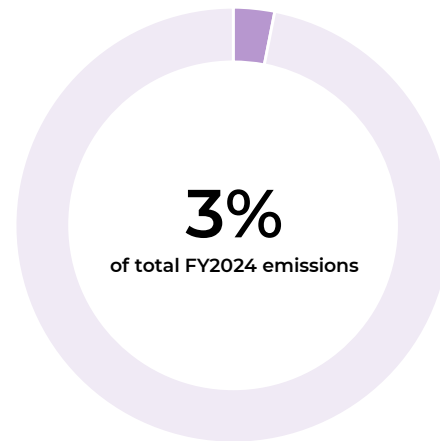


Figure 8: Emissions from travelling from London to Manchester: Flight vs. National Rail

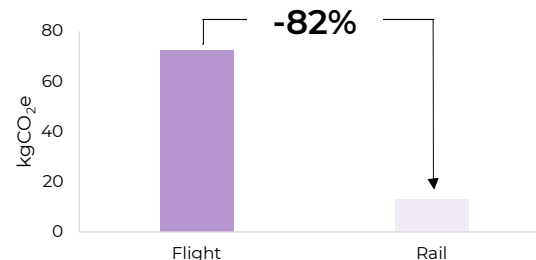


Table 8: FY2024 business travel emissions

	FY2022 Emissions	FY2024 Emissions
Scope 3 – Category 6: Business Travel	5,714 tCO ₂ e	1,762 tCO ₂ e

Table 9: Business travel decarbonisation roadmap

	Year	Action	Description
Completed	-	Implemented a business travel policy.	Ensure that business travel is coordinated so that it is efficient, reported, and monitored.
Short-term	2025	Data improvements.	Collect data relating to all flights taken. Destination, origin and flight class. If private planes are taken, aircraft model and destination/origin information.
	2025	Employee engagement.	Host an employee workshop to educate employees on the impacts of different transport methods. This will ensure employees choose the least emission-intensive option when travelling.
Medium-term	2026	League wide travel mandate.	Explore a Premier League-wide travel mandate. If league-wide men's first teams are required to eliminate air travel to/from league matches, no competitive disadvantage would be had. If Tottenham were to lead the initiative, this could be seen as a major step forward compared to other competitors in the sustainability field.
	2028	Transition vehicle fleet.	As Tottenham Hotspur's fleet vehicles are replaced, opt for 100% electric vehicles only.
Long-term	2030	Travel partnerships.	Partner with low-carbon travel partners to provide premier service to both the men's and women's first teams. For example, Great Western Railway provides a fully private journey to away matches in the southwest.
	2032	Collaborate with the FA and Premier League.	Working with the FA, Premier League, and other clubs to devise match schedules that accommodate low-carbon modes of transport.

Fan Travel (outside the scope of Tottenham Hotspur's emissions)

Overview

Tottenham Hotspur's Scope 3 emissions do not include emissions resulting from Fan Travel, although UEFA guidance says that they should be reported. Tottenham Hotspur remains committed to enabling supporters to attend matches using the most sustainable method possible, but emissions from fan travel will no longer be a part of the measurement and progress of Tottenham Hotspur's Net Zero journey.

If fan travel were included, supporter travel to Tottenham Hotspur home matches (men's first team, women's first team, and U21s) would be equivalent to 44% of the Club's total emissions in FY2024 (down from 50% in FY2023). As these emissions are not directly under Tottenham Hotspur's control, they can be challenging to decarbonise and will require engagement and collaboration.

Relevant action teams

Fan engagement and matchday teams for implementation after approval from finance.

Key challenges

Emissions are not under Tottenham Hotspur's direct control. Initiatives can be implemented, but this does not guarantee a change in supporters' travel habits.

External enablers

The UK Government plans to stop the sale of new petrol and diesel cars, which will slowly reduce the emissions associated with the average car journey. Haringey Council and TFL extending e-scooter schemes would allow fans to travel to Tottenham Hotspur Stadium on hire scooters.

Specific targets/KPIs

To conduct a more comprehensive fan survey. Capturing a higher portion of the over 61,000 supporters travelling to men's first-team games would allow for a more accurate emissions calculation.

Figure 9: Share of total emissions from Fan Travel

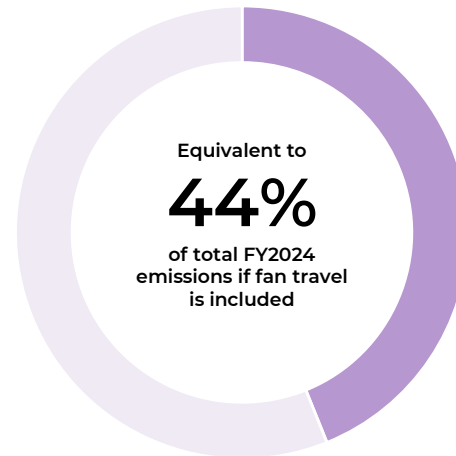
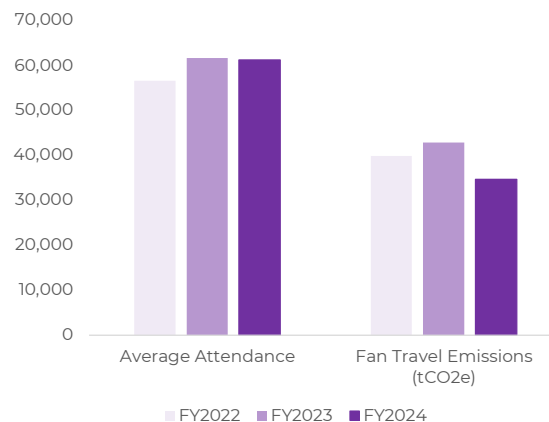


Figure 10: Men's first team fan travel emissions and average attendance



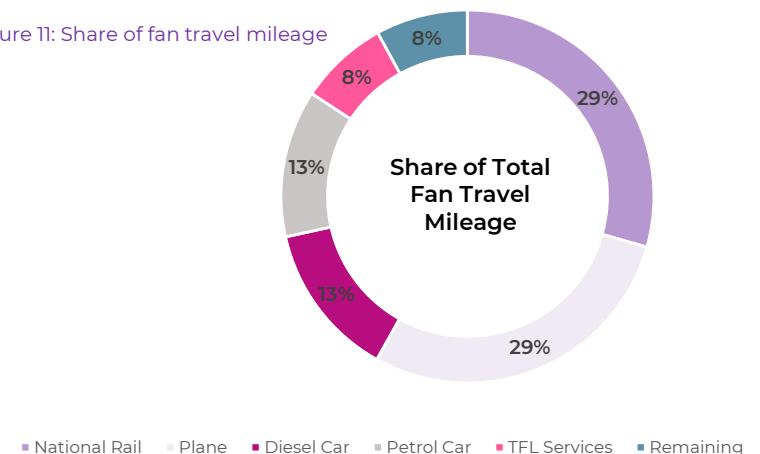
Note: the reduction in emissions from FY2023 to FY2024 is due to fewer home matches (22) being played in the 2023/24 season (2022/23: 27).

Table 10: Fan travel decarbonisation roadmap

	Year	Action	Description
Completed	-	Conducted a baseline fan survey to understand the impact associated with supporter travel.	Roughly 10% of Tottenham Hotspur's average attendance surveyed.
	2025	Conduct a comprehensive fan survey.	Fan travel emissions are extrapolated from roughly 10% of Tottenham Hotspur's average attendance. Collecting a higher share of attendance will improve emissions calculations.
Short-term	2025	Supporter engagement and education.	Educating supporters on the impact of their travel and the alternatives available to them can help to shift patterns and reduce emissions.
	2026	Council & TFL Travel Schemes.	Currently, e-scooter coverage in London does not span to Haringey Council. If Tottenham Hotspur were to work with the Council and TFL, providing an additional low-carbon transport method to supporters could help reduce emissions.
Medium-term	2028	TFL Travel.	Provide funded travel via TFL services on matchdays. Potential to roll out to season ticket holders first. Clubs in Europe have already rolled out similar schemes ² .

⁴ [Borussia Monchengladbach travel methods](#)

Figure 11: Share of fan travel mileage



Financial investment v Emissions savings

Overview

Inspired Energy provided Tottenham Hotspur with an ESOS Phase 3 Group Report in April 2024 as part of its compliance with the Energy Savings Opportunity Scheme (ESOS). This report contained the recommendations resulting from a site survey of Tottenham Hotspur's premises and identified twenty energy-saving opportunities.

Of these measures, fourteen relate to saving electricity. Since all procured electricity is from green contracts, implementing these measures does not result in emissions savings. The report details the cost savings from the measures.

The remaining measures relate to reducing energy (and hence emissions) from burning natural gas. In some instances, the measures relate to reducing gas consumption; in others, they relate to decarbonising through the transition from using gas to electricity.

The gas-saving measures are discussed on this page. Tottenham Hotspur have already started implementing some of these measures.

Table 11: Overview of gas-saving measures recommended in the ESOS report

	Action	Description	Capital cost	Estimated simple payback (years)	Estimated annual energy saving (kWh)
Energy saving	Optimise control system settings.	A centralised building management system (BMS) controls the building's main heating, hot water, and ventilation plant. It has the potential to be optimised to reduce energy consumption and improve comfort. A high-level review of the BMS settings revealed several areas for improvement, including adjusting boiler schedules, evaluating boiler operation efficiency, and reassessing circuit configurations.	£6,820	0.1	1,157,996
	Operate backwash on pool filter condition rather than time interval.	The pool filter's backwashing process, which maintains water hygiene, is performed on a fixed schedule, resulting in high water and energy costs. Implementing a condition-based backwashing approach is recommended.	£660	0.2	27,300
	Install pitch covers to reduce gas consumption for heated pitches.	Heated pitches should be fitted with a cover to reduce the gas consumption required to keep the temperature consistent and to protect them from colder weather issues such as frost and snow.	£165,000	7.9	196,560
Transition away from gas	Install point of use hot water heaters near to taps.	Replace the poorly controlled hot water storage tanks with small, local electric point-of-use hot water heaters, which heat the water only when the tap is turned on and do not have any stored hot water element.	£101,640	0.4	2,486,622
	Replace centralised hot water tank for a packaged air source heat pump HWS tank.	Replace direct-fired gas boilers with packaged Air Source Heat Pump (ASHP) units, particularly in areas that don't require fast tank recharge. This transition uses outside air to heat water and includes electric immersion while maintaining centralised hot water provision.	£297,000	0.9	2,791,902
	Install Air Source Heat Pumps to replace existing gas boilers in the main plant room.	The building at the training ground is heated by two gas boilers and a ground source heat pump. It is recommended that ASHPs be used to replace the boilers at the end of their lives.	£2,450,250	164.4	310,825

If all the gas-saving measures are implemented, the estimated energy saved per annum is 6,971,205 kWh. Expressing this in terms of a carbon saving using the DESNZ 2023 gross CV emissions factor for natural gas equates to 1,275 tCO₂e. Emissions from the combustion of natural gas in FY2023 were 2,029 tCO₂e. The remaining baseload emissions will be eliminated through the transition from gas to electricity, which a combination of self-generated solar electricity and REGO-backed green tariffs will provide.

Appendix

Existing site checklist

☐	LEDs installed
☐	BEMS installed
☐	Staff training and awareness completed
☐	Timers/automatic controls installed on lighting
☐	Timers/automatic controls installed on hot water
☐	Timers/automatic controls installed on heating / air conditioning
☐	Solar PV feasibility reviewed
☐	Natural gas alternative feasibility reviewed

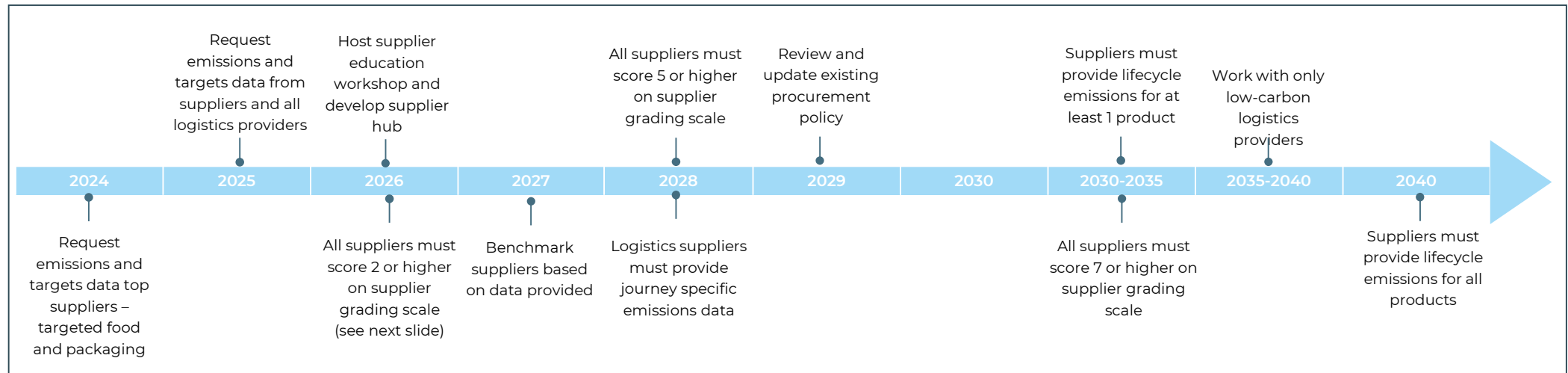
New site checklist

		<i>Recommended criteria</i>
☐	EPC rating (A – G)	<i>C or above</i>
☐	LEDs installed (Yes/No)	<i>Yes</i>
☐	Any on-site energy generation? (solar / wind / anaerobic digestion / gas fired / diesel generator etc)	<i>Ideally solar</i>
☐	Building suitable for solar PV? (Yes/No)	<i>Yes</i>
☐	Current heating source (gas / electric / heat source / biomass)	<i>Ideally electric / heat pump / biomass</i>
☐	Type of glazing in place (single / double / triple)	<i>Double / triple</i>
☐	Age of HVAC / refrigeration systems	<i><10 years</i>
☐	Estimate of annual energy consumption	
☐	Sub-metering in place?	<i>Yes</i>

Supplier engagement

Engaging with your Supply Chain (including logistics providers and product/service suppliers) will be a long-term process. Below is a recommended timeline for the key milestones in the engagement process.

Figure 12: Supplier engagement timeline



Ideas on how to engage / influence change in the supply chain

- Supplier meeting to explain why Tottenham Hotspur is setting Net-Zero Targets and what it means for the supply chain.
- Engage by requesting energy usage numbers.
- Engage through requesting energy source information for suppliers' local area.
- Offering support to install renewable energy, payback over time from supplier.
- Offer Climate Change training with suppliers in their local language and with an adaptive focus on how valuable the environment is to the supplier.
- Create a 'supplier awards program' and publish results through official press releases.
- Offering incentives for hitting reduction targets.
- Support Suppliers who are taking action with more business spend.
- Discuss with other companies who purchase from the suppliers to work together to influence and pressure change.
- Identify environmental audits for the factory and analyse results or request suppliers to go through a chosen environmental audit or obtain certifications such as:
ISO14001:2015 Certification
BSI Sustainability Audit
Initiative for Compliance and Sustainability Audits
- Offer a % of payment towards setting Science Base Targets through SBTi.

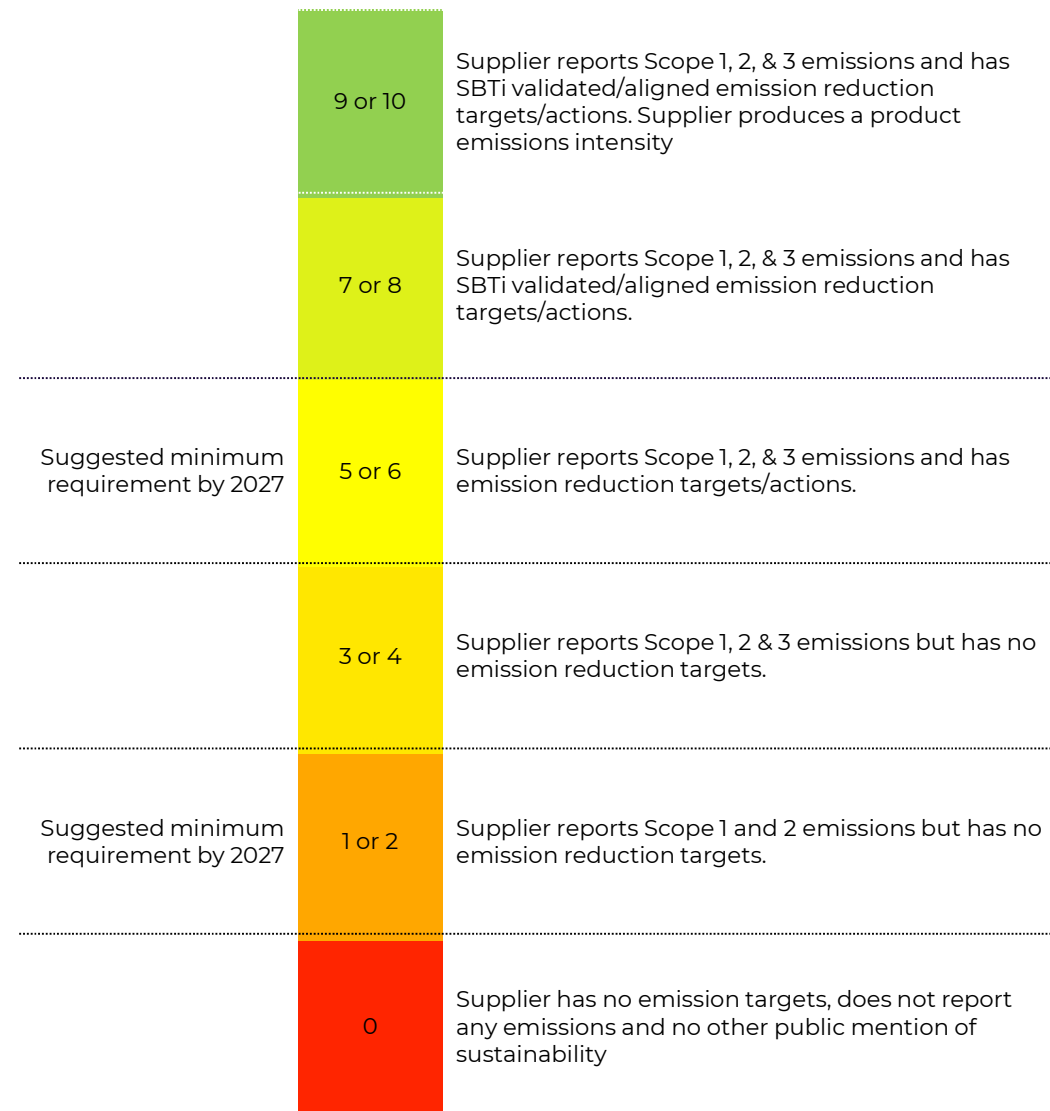
Supplier grading

The following criteria can be used to score suppliers and provide a consistent ranking of suppliers' performance in the sustainability space. The weighting of this grading in relation to costs and other factors within supplier contracts should be agreed upon.

Table 12: Supplier engagement criteria

Criteria	Yes Score	No Score
Do they measure and report Scope 1 and 2 emissions?	1	0
Do they measure and report Scope 3 emissions?	1	0
Do they provide a breakdown of Scope 3 emissions?	1	0
Do they have a net-zero target?	1	0
Do they have near-term target/s?	1	0
Are their targets SBTi aligned or are they SBTi committed or validated?	2	0
Do they have actions for reducing emissions?	1	0
Do they measure and report a product emissions intensity?	2	0

Figure 13: Supplier engagement criteria



Low-carbon logistics options

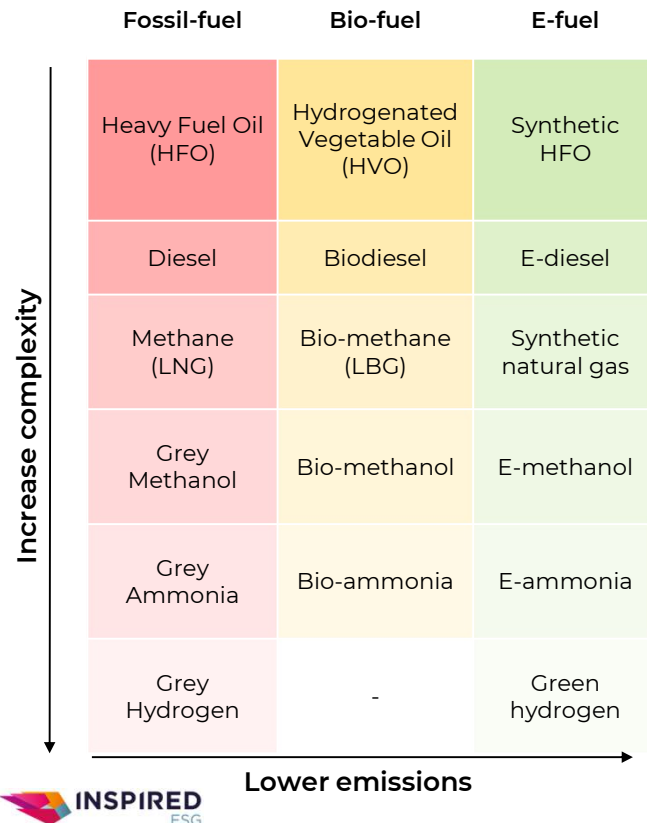
Alternative fuels

There is a range of alternative lower emissions fuels, such as bio-fuels and e-fuels. The alternative fuel that should be used will depend on the current fossil fuel used in the vehicle. Figure 11 demonstrates alternative bio and e-fuels for a variety of fossil fuels.

Switching to bio-fuels over fossil-fuel alternatives can result in up to 90% emission savings.

Alternative fuels offer a viable short-term emission reduction solution but are subject to price fluctuations.

Figure 13: Alternative fuel options



Fuel efficiency initiatives

In the short-medium term, Tottenham Hotspur will need to focus on available fuel efficiency technology and alternative fuels to decarbonise its third-party logistics.

Driving efficiencies and reduced fuel usage can be achieved through:

- Route planning to reduce fuel consumption
- Network/route sharing for optimised efficiency
- Consolidating deliveries
- Driver training to encourage more fuel-efficient driving
- Aerodynamic features added to vehicles and elongated cabs can result in fuel savings of 7-15%

These efficiencies will reduce fuel and so also save costs.

Increasing the capacity of vehicles so that more products are transported will also reduce fuel consumption and fuel costs. Increased capacities can be achieved in several ways:

- Improve the efficiency of products packing
- High-Capacity Vehicles (HCVs) provide an increase in the vehicle's size with heavier loads, which leads to a smaller proportionate increase in fuel consumption. This means less fuel is used compared to smaller vehicles per freight unit hauled. Additionally, increasing the freight transported per journey decreases the number of vehicle journeys required annually.
- Double-Deck Trailers are a similar solution to HCVs; however, the vehicle size does not change.

Vehicle Decarbonisation

Low-carbon vehicle technologies are under development but have yet to be commercially available. Switching Tottenham Hotspur's third-party logistics to low-carbon alternatives will likely play a role from 2030 onwards. The key technologies to be aware of are:

Hydrogen Fuel Cell vehicles (FCEVs)

The earliest 'wide deployment' of FCEVs has an estimated release date of 2040. Production and fueling infrastructure will need to be established at a predicted build rate of 300 per year by 2040.

Battery Electric vehicles

Battery electric vehicles store electricity in renewable batteries that power an electric motor that turns the wheels. Infrastructure is required, and an estimated 860 rapid chargers are needed by 2050. Peak installation is estimated at 69 per year by 2040.

Vehicle compatible with Electric Road Systems (ERS)

There are several different ERS technologies; the most developed is overhead catenary systems (OCS). OCS involves the installation of catenaries alongside a carriageway which connects to a pantograph mounted on top of a vehicle. Compatible vehicles would also have a backup battery to enable travel on roads without an OCS and for obstacles such as bridges and tunnels. The first UK trial is planned for a 40km stretch of road in South Yorkshire.

Emission savings associated with alternative travel

1. Virtual Meetings

Potential savings over a year per employee: 6 tCO₂e

Can be encouraged through employee engagement workshops and green business travel policies that require stricter criteria for face-to-face travel.

(assumes one train journey from Edinburgh to London per month)

2. Cycle to Work

Potential savings over a year per employee: 1.4 tCO₂e

Can be encouraged through cycle-to-work schemes and subsidized bicycle purchases. (assumes commuter was travelling 20 miles per day (round trip) by car and is now cycling every day)

3. Car Share

Potential savings over a year per employee: 1.1 tCO₂e

Can be encouraged through a rewards-based scheme / green travel competition in which employees gain points every time they make a green choice.

(assumes change from 1 passenger in a car to 4 passengers in a car over a 20 miles round trip)

4. Public Transport

Potential savings over a year per employee: 0.6 tCO₂e

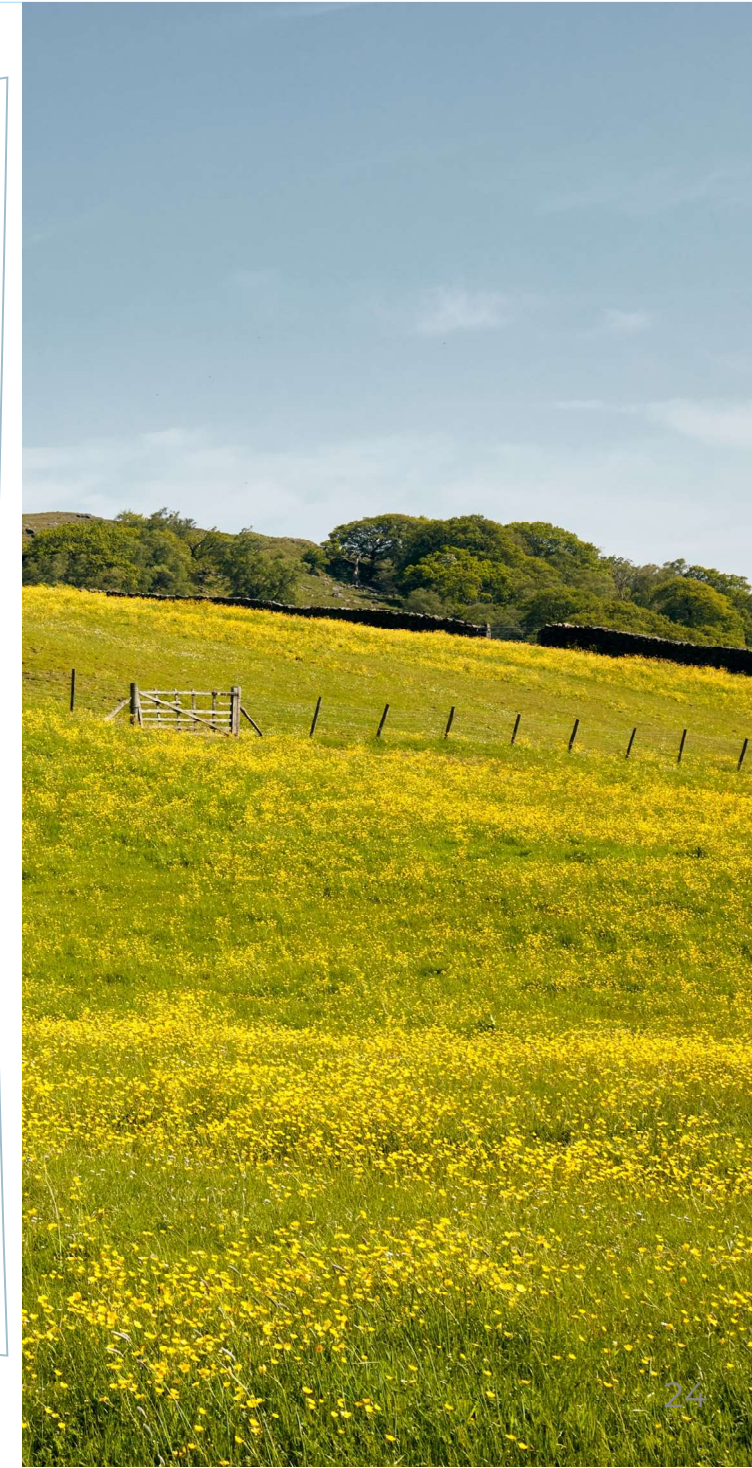
Can be encouraged through subsidised public transport travel to work schemes.

(assumes change for single passenger car to bus travel over a 20 miles round trip)

Case study: PWC's 4% reduction in employee travel emissions

Within a 10-year timeframe, PWC almost doubled the size of their business, yet decreased its CO₂ emissions by 4% and aimed to reduce travel emissions per employee by 33%. Their progress is due to the following factors:

- Reducing the number of journeys made.
- Making better use of technology-based alternatives that support collaborative working.
- Providing training on these technologies.
- Through the government's Cycle to Work Scheme, employees are lent bikes and safety equipment to promote cycling. Infrastructure such as extra shower lockers, double-tier bike locks and lockers have also been installed.
- Low-carbon driving options were promoted amongst staff, including hybrid, electric and low-carbon vehicles available through a company car scheme.
- After careful consideration of whether travel is needed, PWCs travel policy encourages employees to book via their internal system so they can manage the travel information, risk management and costs.
 - Due to this, between 2007 and 2017, non-client-related air travel was reduced by 90% due to internal controls.
- PWCs offices are generally located near public transport as part of real estate strategy and strategic business planning.
- PWC continually aims to improve the reliability of its data.



Offsetting

A carbon offset is a reduction or removal of GHG emissions, paid for by organisations that want to compensate for their emissions. When one tonne of CO₂ is offset, either 1 tonne of CO₂ is removed from the atmosphere, or 1 tonne of CO₂ is prevented from being emitted. Therefore, carbon offsetting is a way to take responsibility for unavoidable carbon emissions.

To offset emissions, organisations must purchase carbon credits (independently verified emissions reductions) equal to their emissions; this can apply to Scope 1, 2 or 3. The money used to buy carbon credits funds emission reduction projects, which would not have occurred otherwise. These projects contribute towards a continued reduction in global carbon emissions.

If a company purchases enough carbon credits to cover all of its emissions, then it can claim carbon neutrality. It is important to note that this is different from being net-zero.

Types of offsets

1. Voluntary Emissions Reduction (VER)

One VER represents the reduction or removal of one tonne of carbon dioxide equivalent achieved through a project. VERs can be purchased voluntarily to help offset 1 tonne of CO₂e of unavoidable emissions from carbon emitters.

2. Carbon Sequestration

Carbon sequestration projects capture carbon dioxide and securely remove it from the atmosphere then stores it to prevent it from entering the atmosphere once again. There are many approaches including; Biological via grasslands, forests, soils and oceans and, Geological via geological formations or injected into rocks.

3. Renewable Natural Gas (RNG)

RNG offsets address GHG emissions and manage organic waste efficiency by creating biogas through Anaerobic Digestion from organic material and utilises the greenhouse gases methane and carbon dioxide. These offsets help replace fossil fuels with renewable natural gas and are commonly used for renewable heat by businesses, the public sector and non-profit organisations.

4. Renewable Energy

Renewable energy carbon offsets finance renewable energy projects such as wind, solar or hydro. These projects reduce carbon emissions as an investment is spent to boost the amount of renewable energy on the grid and decrease reliance on fossil fuels.

Insetting

What is it?

Insetting is a form of offsetting that involves organisations investing in carbon reduction projects within their value chain (Scope 3). In contrast to typical carbon offset projects, which are unrelated to the investor, insetting projects reduce, sequester or remove emissions directly linked to a company's supply chain whilst also generating multiple positive, sustainable impacts.

According to the Science Based Target Initiative (SBTi), insetting projects are often called "supply chain interventions" because they are investments and actions organisations take to change and positively impact their supply chain. This reduces a company's Scope 3 emissions whilst supporting others to employ more sustainable business practices.

Why does it matter?

To help reach your net-zero target, the whole value chain must be decarbonised through nature-based solutions and operations. By focusing on insetting, you are focusing on doing more good rather than doing less harm.

There are currently no standards for insetting projects; however, the International Carbon Reduction and Offset Alliance (ICROA) offers the following best practices for organisations interested in insetting:

How	Why
Invest financially in the development and maintenance of a carbon offset project within their upstream or downstream supply chain/supply chain community.	Including the stakeholders with a direct link to the supply chain means you are connected with those with either the production of the product/service or to those who are positively or negatively impacted by the supply chain operations.
Insetting should generate GHG emission reductions that respect the principles of international standards (i.e. Additionality, permanence, uniqueness, measurability, verifiability, etc.)	Right now, insetting does not require verification of certification against agreed global standards. However, working inline with these principles provides more credibility to the implemented insetting project.
A number of companies are already investing in insetting projects. One example is Nespresso, who are planting native trees on their suppliers coffee farms and surrounding landscapes to introduce regenerative agriculture.	This increases water provision, improves soil health, conserves biodiversity and provides the desired shade for coffee plants all of which enhances quality of the coffee beans, for which farmers receive a premium. The trees also offer natural carbon sinks that enable Nespresso to compensate for their own residual emissions that cannot be reduced.

Glossary

Adjusted Spend: Adjusting the provided spend values for the baseline year 2022 to the year of the spend-based DEFRA databases (2018/2011). This adjusted value is used to calculate the associated carbon emissions.

Carbon dioxide (CO₂): A greenhouse gas that enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees and other biological materials, and also as a result of certain chemical reactions (e.g., cement production).

Carbon Neutral: Carbon neutral means an organisation has purchased an equivalent number of compensatory measures, such as carbon offsets and green energy certificates, to neutralise their GHG emissions

Carbon Offsets: Investing in voluntary carbon offsets funds low-carbon projects that replace high-emitting alternatives. Carbon offsets can be used to compensate for a company's emissions.

Embodied Emissions: Embodied emissions are emissions associated with the cradle-to-gate manufacture of products, for example, emissions produced through the extraction of raw materials, transportation of materials, and manufacturing processes.

Fluorinated gases: Hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride are synthetic, powerful greenhouse gases that are emitted from a variety of household, commercial, and industrial applications and processes.

Greenhouse gas (GHG): Gases that trap heat in the atmosphere.

GHG Protocol: The Greenhouse Gas Protocol is the most widely used standard for calculating greenhouse gas (GHG) emissions.

Global warming potential (GWP): GWP is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO₂). The larger the GWP, the more that a given gas warms the Earth compared to CO₂ over that time period.

Kyoto Protocol: The Kyoto Protocol operationalises the UN Framework Convention on Climate Change by committing industrialised countries and economies in transition to limit and reduce greenhouse gas (GHG) emissions in accordance with agreed individual targets. Seven GHGs are required to be reported under the Kyoto Protocol: Carbon dioxide (CO₂), Methane (CH₄), Nitrous oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur hexafluoride (SF₆) and Nitrogen trifluoride (NF₃)

Location-based emissions: Methodology to calculate Scope 2 emissions using the average grid emissions factor of a region.

Market-based emissions: Methodology to calculate Scope 2 emissions using emissions factors specific to the contractual instruments in place.

Methane (CH₄): A greenhouse gas emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices, land use, and the decay of organic waste in municipal solid waste landfills.

Net-zero: Net-zero requires a concerted effort over time to eliminate GHG emissions, with compensatory measures as a final step for any emissions that can't be reduced. The SBTi net-zero standard requires a 90% reduction in emissions prior to any residual offsets, up to 10% of the baseline, being offset using carbon removal offsets.

Nitrous oxide (N₂O): A greenhouse gas emitted during agricultural, land use, and industrial activities; combustion of fossil fuels and solid waste; as well as during treatment of wastewater.

SBTi: The Science Based Targets initiative (SBTi) is the internationally recognised body for validating emissions reduction targets that are in line with the latest climate science.

Scope 1: Emissions from gas usage and transportation fuels (under the company's control).

Scope 2: Emissions associated with the consumption of purchased electricity. They are presented on both a location-based (using country average electricity emission factors) and a market-based (taking into account any purchased renewable generated electricity) approach.

Scope 3: Company's value chain emissions, divided into 15 categories, as established by the Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting & Reporting Standard.

Sulphur hexafluoride (SF₆): A greenhouse gas that is primarily used in electrical transmission and distribution equipment.

tCO₂: Tonnes of carbon dioxide gas released into the atmosphere. This metric is often used when reporting electricity emissions factors.

tCO₂e: Greenhouse gases have different global warming potentials and are converted to a carbon dioxide equivalent for ease of comparison and reporting.

IV: Quality Review

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